If you are using a printed copy of this procedure, and not the on-screen version, then you MUST make sure the dates at the bottom of the printed copy and the on-screen version match. The on-screen version of the Collider-Accelerator Department Procedure is the Official Version. Hard copies of all signed, official, C-A Operating Procedures are available by contacting the ESSHQ Procedures Coordinator, Bldg. 911A

C-A OPERATIONS PROCEDURES MANUAL

15.3.2.8 Procedure for Replacing an SCR in PS 607 or a PPA Power Supply in Booster

(Booster/AGS Ring Power Supply Systems Group Procedure EPS-B-008)

Note: This document was formerly a C-A Group Procedure. The content of the group procedure was reviewed by the Technical Supervisor. All approvals and/or issue dates of the original group procedure are maintained for present use.

Hand Processed Changes

HPC No.	Date	Page Nos.	Initials

Approved: _____***Signature on File***_____ _____
Collider-Accelerator Department Chairman Date

M. Bannon

Booster/AGS Ring Power Supply Systems
Group Procedure EPS-B-008

1. Procedure:

1.1 This procedure is for replacing an SCR in power supply 607 or a PPA Power Supply in Booster to determine the integrity of the main magnet electrical insulation.

2. Tools Needed:

a) Torque wrench in inch-lbs. (SCR torque value is 180 in-lbs.)
b) 3/8 socket wrench set
c) Flat tip screwdriver
d) Crimper and wire stripper
e) Oak wedges 2 each
f) Adjustable wrench for side panel
g) Scotch-brite
h) Penatrox
i) 600 emery paper
j) Rag–on-roll
k) Red barrell splices
l) Red spade lugs
m) Duct tape
n) Scissors
o) Wire cutter
p) Pad and pen
q) Droplight

3. Purpose:

3.1 Having looked at the dc output of the power supply you have determined that there is a bad SCR in a bridge which needs to be replaced.

1. LOTO the disconnect switch which feeds the 480vac 3 phase input power. [ ]
2. Verify that power is off. [ ]
3. Remove any necessary side panels to again access to SCR bridge. [ ]
4. Remove micarta baffles around SCR heatsink to gain access to SCR clamps. [ ]
5. Remove SCR gate leads from terminal block. [ ]
6. Using the 3/8” drive socket wrench with a 7/16” socket loosen the SCR clamp on the SCR which is being replaced. [ ]

7. Once the SCR clamp is loosened pry the heatsink apart gently so SCR is able to be separated from the pins which are in the Heatsink that keep the SCR c entered, then remove the SCR. [ ]

8. Inspect the surface of the heatsink where the SCR has just been removed for pit marks or signs of voids in heatsink. If the surface is not smooth the whole heatsink may have to be replaced. If so, remove the necessary bus that is in the way and remove the 8-3/8 bolts which hold the SCR heatsink to the back panel. If the heatsink looks fine, clean the heatsink as best you can with 600 paper and prep SCR for installation. [ ]

9. Set 600 paper on a smooth surface and polish both sides of the SCR by moving SCR a circular on the paper. [ ]

10. Put a small amount of penetrox on both sides of SCR and wipe it on the SCR surfaces were by it can hardy be seen. [ ]

11. Install the SCR in the proper anode-cathode direction and align it on the pins which are in the heatsink. [ ]

12. **Tightening SCR clamping bolts**: first make sure both bolts are flush with the back end of clamp (no threads exposed),then alternate tightening each bolt using ¼ turn intervals so clamping force is even. Once both bolts are tight use a torque wrench, (set at 180 in-lbs) use the same method as above using ¼ turns on each bolt torque bolts are torqued to 180 in-lbs [ ]

13. Connect the SCR gate leads to the terminal strip. (4.7 ohm resistor is in series with the gate) leads may have to be extended so they do not interfere with micarta baffle. [ ]

14. Install all micarta air baffles. [ ]

15. Tighten all loosen hardware. [ ]

16. Tighten all bus work. [ ]

17. Reconnect klixon string so all klixons are in series. [ ]

18. Check snubbers are not broken. [ ]

19. Reinstall any side panels which were removed. [ ]

20. Inspect there was no hardware, tools left in power supply. [ ]

21. Remove LOTO. [ ]

22. Turn PS on and check dc output for proper ripple. [ ]